

May 2007

An Amendment to the Water Quality Control Plan for the Colorado River Basin Region to Establish the Coachella Valley Storm Water Channel Bacterial Indicators Total Maximum Daily Load

AMENDMENT

(Proposed changes are in reference to the Basin Plan as amended through October 2005. Proposed additions are denoted by underlined text, proposed deletions are denoted by ~~strikethrough text~~)

To CHAPTER 4- IMPLEMENTATION, Section V. TOTAL MAXIMUM DAILY LOADS (TMDLS) AND IMPLEMENTATION PLANS, add the following new subsequent Sections and renumber accordingly:

F. Coachella Valley Stormwater Channel Bacterial Indicators Total Maximum Daily Load

1. TMDL ELEMENTS

Table F-1: Coachella Valley Storm Water Channel Bacterial Indicators TMDL Elements

<u>ELEMENT</u>	<u>DESCRIPTION</u>												
<u>Project Definition</u>	<p>Coachella Valley Stormwater Channel (CVSC) is on the California 303(d) List for impairment by pathogens of unknown sources. This listing applies to the 17-mile length of the CVSC from Indio to the Salton Sea. This violation of water quality standards (WQSs) is a threat to public health, and impairs the following CVSC beneficial uses (BUs): Water Contact Recreation (REC I) and Water Non-Contact Recreation (REC II). WQSs consist of designated beneficial uses, specified numeric or narrative water quality objectives (WQOs) that protect these BUs, and antidegradation requirements to ensure that existing uses and the level of water quality necessary to protect the existing uses are maintained and protected. The following Table summarizes REC I bacteria indicator WQOs for all surface waters in the Colorado River Basin Region, excepting the Colorado River:</p> <p style="text-align: center;"><u>Bacteria Indicator Water Quality Objectives</u></p> <table><tr><th><u>Indicator Parameter</u></th><th><u>30-Day Geometric^a Mean</u></th><th><u>Maximum Instantaneous</u></th></tr><tr><td><u>E. coli</u></td><td>126 MPN^b/100 Millileter (ml)</td><td>400 MPN/100 ml</td></tr><tr><td><u>Fecal coliform</u></td><td>200 MPN/100 ml</td><td>c</td></tr><tr><td><u>Enterococci</u></td><td>33 MPN/100 ml</td><td>100 MPN/100 ml</td></tr></table> <p>a- <u>Based on a minimum of no less than 5 samples equally spaced over a 30-day period.</u> b- <u>Most probable number.</u> c- <u>No more than 10 % of total samples during any 30-day period exceed 400 MPN per 100 ml</u></p>	<u>Indicator Parameter</u>	<u>30-Day Geometric^a Mean</u>	<u>Maximum Instantaneous</u>	<u>E. coli</u>	126 MPN ^b /100 Millileter (ml)	400 MPN/100 ml	<u>Fecal coliform</u>	200 MPN/100 ml	c	<u>Enterococci</u>	33 MPN/100 ml	100 MPN/100 ml
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	<p><u>Federal Clean Water Act (CWA), Section 303(d)(1)(A) requires all states to identify surface waters impaired by pollution (i.e., that do not meet WQSSs), and to establish Total Maximum Daily Loads (TMDLs) for pollutants causing the impairments. As a result, a TMDL to address bacterial indicator organisms is proposed for CVSC, which has been completed pursuant to the State of California TMDL Guidance issued in June 2005 and USEPA guidance published in April 2001.</u></p>
<u>Watershed Description</u>	<p><u>CVSC is located in Coachella Valley in Riverside County, California. The Coachella Valley is bounded to the north by the San Bernardino and Little San Bernardino Mountains, and to the south by the San Jacinto and Santa Rosa Mountains, and the Salton Sea. The Coachella Valley has been heavily agricultural since the early 1900's. Agricultural lands are irrigated by groundwater and water from the Colorado River delivered to the Valley through the Coachella Canal via the All-American Canal. CVSC is an unlined, engineered extension of the Whitewater River, and serves as a conveyance channel for irrigation return water, treated wastewater from three National Pollutant Discharge Elimination System (NPDES) permitted municipal wastewater treatment plants, wastewater discharge from one NPDES permitted aquaculture facility (Kent SeaTech Corporation Fish Farm (KSCFF), owned/operated by Kent SeaTech Corporation), and urban and stormwater runoff. The three permitted wastewater treatment plants are:</u></p> <ul style="list-style-type: none"> <u>• Valley Sanitary District Wastewater Treatment Plant (VSDWTP), Indio, owned/operated by Valley Sanitary District;</u> <u>• Mid-Valley Water Reclamation Plant (MVWRP), Thermal, owned/operated by Coachella Valley Water District (CVWD); and</u> <u>• Coachella Sanitary District Wastewater Treatment Plant (CSDWTP), Coachella, owned/operated by the City of Coachella and the Coachella Sanitary District.</u> <p><u>Average annual flows in CVSC are decreasing due to changes in agricultural practices and suburban development. The CVSC and its tributary drains provide flood control and protection in addition to habitat for many types of wildlife including migratory songbirds, waterfowl, coyotes, raccoons, and rodents. Although recreation in the stormwater channel is prohibited by CVWD, people are known to recreate in and around the stormwater channel.</u></p>
<u>Data Analysis</u>	<p><u>During the development of this TMDL, water quality samples were collected monthly at eight locations in the CVSC, from February to September 2003, to evaluate bacteria concentrations and loading. Eleven of the 59 samples collected exceeded the 400 MPN/100 ml E. coli WQO in the Colorado River Basin Water Quality Control Plan (Basin Plan) and one of the proposed numeric targets for this TMDL. Based on the 2004 State of California's 303(d) Listing Policy, this exceedance rate would be sufficient to confirm the impairment identified in the 303(d) List.</u></p>
<u>Source Analysis</u>	<p><u>To identify potential sources of bacteria, Regional Board staff reviewed bacteria</u></p>

	<p>data provided by the three NPDES wastewater treatment facilities (WWTFs) and the Municipal Separate Storm Sewer System (MS4) permittees¹ discharging into CVSC. Data reviewed indicate that all three WWTFs met their applicable bacteria WQOs. Data also indicate that urban and storm water flows contain fecal coliform levels in violation of its applicable WQOs for REC I and REC II. These water quality violations range up to 900,000 MPN/100 ml at Avenue 52 Storm Drain in Coachella, September 1999, and 70,000 MPN/100 ml at Monroe Street Storm Drain in Indio, April 1999. Due to the limited data available, actual contribution from urban and storm water runoff and contributions from other point and nonpoint sources require further characterization.</p> <p>To further identify possible sources of bacteria to CVSC, a Ribotype or DNA microbial source tracking (MST) method was used. MST methods match fingerprints from bacterial strains isolated from a water system to those isolated from hosts such as humans, cows, geese, chicken, or municipal wastewater. The DNA monitoring and analysis study was conducted from October 2003 through March 2004. Two hundred water samples were collected from three sites along CVSC. <i>E. coli</i> strains were isolated from water samples, ribotypes fingerprinted, and then compared to a source library. The DNA monitoring and analysis study determined the percentage distribution of fecal sources in the CVSC. The following potential bacterial sources were identified in CVSC from the two hundred samples collected during the study: avian (40%), human (25%), rodents plus other wild mammals (25%), and livestock (<3%). Approximately 6% of the <i>E. coli</i> species originated from unknown sources. This distribution provides an idea of the possible sources of bacteria in CVSC, although it does not reflect the relative loading from those sources. Although scientific studies support the use of ribotype-based MST methods, there are concerns regarding their accuracy due to spatial and temporal vectors, stability of the markers, and sampling design.</p>
<u>Critical Conditions and Seasonal Variation</u>	<p>The climate in the Coachella Valley is arid with hot summers and warm winters and very low average annual rainfall (<3 inches/year). The water in the CVSC mainly originates from irrigation return flows, rising groundwater, fish farm effluent, treated municipal wastewater, urban runoff, and stormwater runoff. Analysis of available water quality data suggest slightly higher concentrations of bacteria in warm months, but the bacteria concentrations do not appear to be correlated with flow.</p>
<u>Numeric Targets</u>	<p>TMDL numeric targets derived from the Basin Plan's WQOs have been established for <i>E. coli</i> as a log mean (Geomean) of 126 MPN/100 ml (based on a minimum of not less than five samples during a 30-day period), or 400 MPN/100 ml for a single sample. The TMDL targets must not be exceeded more frequently than the allowable exceedence rate described in the State of California's 303(d) Listing Policy, as a result of controllable sources. These targets shall be attained by 2014.</p>
<u>Linkage Analysis</u>	<p>For this TMDL, the connection between pollutant loading and protection of BUs is established by the fact that TMDL numeric targets and allocations are equal to WQOs for the most stringent BU of CVSC in the Basin Plan. Therefore, this</p>

¹ MS4 Permittees who discharge stormwater or urban runoff to the impaired portion of the CVSC are Riverside County and the City of Coachella.

	<p><u>TMDL's numeric targets protect all BUs of CVSC. There is a one-to-one relationship between loading allocations and numeric targets in this TMDL. For example, a 30-day geometric mean wasteload/load allocation of 126 MPN/100 ml for E. coli at the point of discharge makes it more likely that 126 MPN/100 ml or less will be present in the CVSC, especially if contributions from natural background sources are not exceeding these allocations. The potential for increased concentration downstream due to growth and decay dynamics may be offset by dilution from subsurface drainage from irrigated agricultural land and effluent from permitted wastewater treatment plants.</u></p>													
<p><u>TMDL Calculations and Allocations</u></p>	<p><u>A TMDL is a numeric calculation of the loading capacity of a water body to assimilate a certain pollutant and still attain all WQSSs. The TMDL is the sum of the individual wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources and natural background sources, and a margin of safety (MOS) to address uncertainties. Discharges from all current and future point sources and controllable nonpoint sources of pollution to the impaired section of CVSC shall not exceed the following WLAs and LAs for E. coli:</u></p> <p><u>Both WLAs and LAs for E. coli are:</u></p> <ol style="list-style-type: none"><u>1) the log mean (Geomean) of samples collected shall not exceed 126 MPN/100 ml (based on a minimum of not less than five samples during a 30-day period), or</u><u>2) 400 MPN/100 ml for a single sample.</u> <p><u>The allocations are applicable throughout the entire stretch of the impaired section of the CVSC year-round. The numeric target concentrations are based on extensive epidemiological studies conducted by the USEPA and others. To address the uncertainty concerning bacterial die-off and re-growth dynamics in CVSC, and to better address critical conditions and seasonal variations, this TMDL provides a MOS by including a monitoring and review plan that uses data collected during implementation to evaluate TMDL effectiveness and the need for revision.</u></p> <p><u>Load allocations (LAs) and wasteload allocations (WLAs) for bacteria indicator dischargers into CVSC are described below:</u></p> <table><tr><th><u>Allocation Type</u></th><th><u>Discharger</u></th><th><u>E. Coli Allocations</u></th></tr><tr><td rowspan="3"><u>Point Source (WLAs)</u></td><td><u>VSDWTP</u></td><td rowspan="3"><u>A log mean (Geomean) of ≤126 MPN/100 ml (based on a minimum of not less than five samples during a 30-day period)</u></td></tr><tr><td><u>CSDWTP</u></td></tr><tr><td><u>MVWRP</u></td></tr><tr><td rowspan="3"><u>Point Source (WLAs)</u></td><td><u>KSCFF</u></td><td rowspan="3"><u>A log mean (Geomean) of the MPN of ≤126/100 ml (based on a minimum of not less than five samples during a 30-day period), or 400 MPN/100 ml for a</u></td></tr><tr><td><u>Cal-Trans</u></td></tr><tr><td><u>Cities of Coachella and County of Riverside (MS4 co-</u></td></tr></table>	<u>Allocation Type</u>	<u>Discharger</u>	<u>E. Coli Allocations</u>	<u>Point Source (WLAs)</u>	<u>VSDWTP</u>	<u>A log mean (Geomean) of ≤126 MPN/100 ml (based on a minimum of not less than five samples during a 30-day period)</u>	<u>CSDWTP</u>	<u>MVWRP</u>	<u>Point Source (WLAs)</u>	<u>KSCFF</u>	<u>A log mean (Geomean) of the MPN of ≤126/100 ml (based on a minimum of not less than five samples during a 30-day period), or 400 MPN/100 ml for a</u>	<u>Cal-Trans</u>	<u>Cities of Coachella and County of Riverside (MS4 co-</u>
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		<u>permittees)</u>	<u>single sample</u>
	<u>Nonpoint Source (LAs)</u>	<u>Agricultural Runoff</u> <u>Federal Lands</u> <u>Tribal Lands</u>	<u>A log mean (Geomean) of ≤126 MPN/100 ml (based on a minimum of not less than five samples during a 30-day period), or 400 MPN/100 ml for a single sample</u>
	<u>Nonpoint Source (LAs)</u>	<u>Septic Systems</u>	<u>Zero (0) MPN/100 ml</u>
<u>Monitoring Plan</u>	<u>Dischargers will be required to develop and submit as a whole, or in groups, a comprehensive water quality monitoring program for the 303(d) listed segment of CVSC to the Regional Board Executive Officer for review and approval 90 days after USEPA approves the TMDL. The monitoring plan will include a sufficient number of monitoring stations and monitoring events to adequately address all potential sources of bacteria.</u>		

2. IMPLEMENTATION ACTIONS FOR ATTAINMENT OF TMDL

The implementation plan is divided into two phases and begins 90 days following USEPA approval of the TMDL. Phase I actions will take three years to complete and will focus on monitoring and addressing pathogens associated with wastewater discharges from NPDES facilities, and agricultural , urban , and stormwater runoff. Regional Board staff will coordinate closely with USEPA to address waste discharges from tribal lands. If WQOs are not achieved by the end of Phase I, Regional Board staff will implement additional actions to control pathogenic sources in Phase II. Enforcement actions against violators of the TMDL will occur in both phases if necessary. This approach provides for immediate assessment of known pathogenic sources while allowing time for additional monitoring to assess TMDL implementation, effectiveness, and need for modification.

2.1 Phase I Implementation Actions

Phase I actions will occur within three years, and begin immediately after USEPA approves the TMDL. Phase I requires:

- Revise KSCFF's NPDES permit to include E. coli limitations and monitoring. Currently, KSCFF has an NPDES permit to discharge to CVSC, but monitoring for bacteria is not required.
- Monitor CVSC for bacteria loading from irrigated agriculture, Cal-Trans, federal lands, and tribal lands;
- Identify significant agricultural, federal, and tribal dischargers to CVSC and notify them of their role in TMDL implementation;

- Receive a written report from each tribal entity, or from USEPA, describing measures to ensure waste discharges from tribal property do not violate or contribute to a violation of this TMDL;
- Revise MS4 permits to include monitoring and reporting for E.coli, and issue similar stormwater permits or other directives to other entities/municipalities discharging to CVSC (if any);
- Prepare an amendment to the Basin Plan that rectifies current limitations of having three bacteria indicator organisms, clarifies which indicators apply to which surface waters of the Region, and as necessary, develops site-specific objectives; and
- Monitor, track, and survey CVSC to determine if Phase I activities achieve bacteria WQOs.

2.2 Phase I Implementation Responsible Parties and Schedule

The time schedule and parties responsible for implementing Phase I actions are provided in Table F-2 below.

Table F-2: Phase I Actions and Time Schedules

<u>Due</u>	<u>Action</u>
<u>Immediately following Regional Board approval of TMDL</u>	<u>Regional Board staff shall begin preparing an amendment to the Basin Plan that rectifies current limitations of having three bacteria indicator organisms, clarifies which indicators apply to which surface waters of the Region, and as necessary, develops site-specific objectives. This Basin Plan amendment shall be drafted and presented to the Regional Board for consideration of adoption at the earliest practicable date, but no later than eighteen (18) months following USEPA approval of the CVSC Bacterial Indicators TMDL.</u>
<u>90 days after USEPA approves the TMDL</u>	<u>Pursuant to requests from the Regional Board, the responsible parties (Coachella Valley Water District; Riverside County; Kent Seatech Corporation; Cal-Trans (MS4); City of Coachella (MS4); Agricultural Lands; Federal Lands; and Tribal Lands) shall develop two-year long, bacterial indicator water quality monitoring programs. Quality Assurance Project Plans (QAPPs) shall be developed and submitted to the Regional Board Executive Officer for review and approval. Monitoring data will be provided to Regional Board staff on a quarterly basis and will be used to assess contributions of bacteria to CVSC from anthropogenic sources (stormwater, agricultural drains, urban runoff, and others).</u>
<u>90 days after USEPA approves the TMDL</u>	<u>Regional Board staff will begin to identify significant agricultural, federal, and tribal dischargers to CVSC and notify them of their role in TMDL implementation.</u>
<u>90 days after USEPA approves the TMDL</u>	<u>Regional Board staff develops a plan to conduct TMDL surveillance and track TMDL activities. The objectives of the plan are to assess monitoring data, measure milestone attainment, and determine compliance with the TMDL.</u>
<u>90 days after USEPA approves the TMDL</u>	<u>Regional Board staff will start the process of revising KSC's NPDES permit to include bacteria effluent limitations and monitoring.</u>

<u>90 days after USEPA approves the TMDL</u>	<u>Pursuant to a request from the Regional Board, each tribal entity, in coordination with USEPA, submits a technical report describing measures to ensure that waste discharges to CVSC from tribal land do not violate or contribute to a violation of this TMDL.</u>
<u>3 years after USEPA approves the TMDL</u>	<u>Regional Board staff submits a written report to the Regional Board describing monitoring results, milestone attainment, and the need to revise the TMDL, if necessary.</u>

Phase I actions are intended to aid in developing an effective assessment of critical conditions and sources that will be used to develop and implement appropriate control measures in Phase II. Responsible parties that are faithfully fulfilling their responsibilities have no obligation to undertake the actions assigned to others who fail to perform.

2.3 Phase II Implementation Actions

Actions taken in Phase I (2008-2010) will determine whether WQOs have been achieved, sources of bacterial pollution have been identified, and whether additional actions are required in Phase II (2010-2014) to meet WQOs. If monitoring and assessment in Phase I indicate that waste discharges to CVSC from anthropogenic activities violate this TMDL, and that violations persist despite recommended operation and maintenance procedures and control measures in their existing permits, the Regional Board will require the implementation of additional actions to control pathogenic sources in Phase II. The Regional Board will require responsible parties to select and implement new/additional management practices (MPs) for Phase II following characterization of sources and whether these sources can be controlled based on reasons such as background conditions and cost factors. . The Regional Board may revise Municipal Separate Storm Sewer System (MS4) permit effluent limitations, potentially expressed in terms of management practice (MP) requirements. The Regional Board may also consider revising WQOs for CVSC to address natural background sources of bacteria. This revision will be accomplished through a Site Specific Objective (SSO) after completing a Use Attainability Analysis (UAA). The SSO will be developed by 2014 if needed.

Violations of WQOs will be addressed by implementing MPs identified in the discharger's existing Regional Board permit, or by implementing measures provided in the SWRCB's Nonpoint Source Program Plan and/or Nonpoint Source Program Strategy and Implementation Plan (PROSIP). Appropriate and required regulatory procedures will be followed prior to implementing any additional control practice(s).

2.4 TMDL Review Schedule

Annual reports will be provided to the Regional Board describing progress in attaining milestones. The reports will assess:

- Water quality improvement in terms of E. coli concentration;
- Milestones achieved, delayed, or not achieved, and why; and
- Compliance with Regional Board orders and requests.

2.5 Triennial Review

Federal law requires states to hold public hearings to review WQSs, and modify/adopt standards as appropriate (CWA Section 303(c); 40 CFR Section 131.20). State law requires formulating and periodically reviewing and updating regional water quality control plans (Basin Plan) (CWC Section 13240). All Basin Plan amendments and supporting documents adopted by the Regional Board must be submitted to the SWRCB, and then OAL, for review and approval. Lastly, the USEPA has final approval authority for Basin Plan amendments concerning surface waters.

The first review of this TMDL is scheduled for completion three years after USEPA approves the TMDL to provide adequate time for implementation and data collection. Subsequent reviews will be conducted concurrently with the Triennial Review of the Basin Plan. The TMDL review schedule is shown below in Table F-3.

Table F-3: TMDL Review Schedule

<u>Activity</u>	<u>Date</u>
<u>USEPA Approval</u>	<u>2007</u>
<u>Terminate First TMDL Review, and conduct Regional Board Public Hearing</u>	<u>2010-2011</u>
<u>Terminate Second Review and Conduct Regional Board Public Hearing</u>	<u>2013-2014</u>
<u>Etc.</u>	

Monitoring results and progress toward milestone attainment will be provided during Triennial Review public hearings. If TMDL progress is insufficient, staff will recommend to the Regional Board additional MPs to control pollutant sources, enforcement action, TMDL revision, or other means to achieve WQOs.

This proposed review schedule reflects the Regional Board's commitment to periodic review and refinement of this TMDL, via the basin plan amendment process.